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# Food Security in Kazakhstan: Do Gender Inequalities Affect?

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## Abstract

Kazakhstan has a large reserve of natural resources to provide the food self-sufficiency with domestic production. It could be three times more than population needs. However, Kazakhstan depends on food import and the agricultural sector accounts for 5% of GDP only. The actual poverty is higher than official data indicate, and it's about four times more in rural areas where 46% of population resides and one-fifth of the working-age population is employed. Women represent the majority among the poor and unemployed and face unequal treatment in labor market and burden of larger unpaid household workload. All of this decreases women's purchasing power, lowering economic access to quality food. This paper examines the interaction of gender inequality and food insecurity, applying the growth constraints analysis and engendering this approach and the empirical research on Karaganda oblast. It argues that gender inequality and rural poverty are linked to high economic costs and constraints in agriculture development and food security attainment.

**Keywords:** gender economics, food security, rural poverty, growth constraints analysis, Kazakhstan

## 1. Introduction

Kazakhstan is one of the top 9 countries in the world in terms of agricultural land and among 12 leading wheat exporters. It is among the top 15 countries in the world in terms of oil reserve. These resources could provide effective food self-sufficiency with domestic production of three times more than the population needs. However, Kazakhstan's local food production is much less than the present population needs. Kazakhstan is considered as an upper middle-income country [1] and has 2.8% of the population with income below the poverty line [2]. However, actual poverty is higher than official data, since the estimation of poverty line by the Kazakhstan Ministry of Labor and Social Protection of the Population does not correspond to international standards. Rural poverty is about four times more than in urban areas, and 46% of the population resides in rural areas. Agricultural sector in Kazakhstan comprises 5% of total GDP only, while it employs about one-fifth of the working-age population [3].

This paper focuses on gender dimension of economic issues needed to address gender inequality that continues to persist. It argues that gender equality is an important prerequisite to provide the food security. This research emphasizes on the impact of economic changes in Kazakhstan on women, their role in economy and unpaid household labor, and revealing of underlying causes of gender

discrimination. Women in Kazakhstan comprise the majority among the poor and unemployed and face unequal treatment in labor market. And yet, women are the main economic agents of the country. In 2017, female labor force participation rate was 65.4% [4]. Women's daily work such as cooking; work in farms and household plots; food processing; and caring of livestock and other farm animals is crucial in the provision of the food security of country. "Gender-based constraints must be addressed to increase agricultural productivity; improve food security; reduce poverty; and build the resilience of rural population" [5].

This paper reviews the theoretical framework of the gender and macroeconomics and provides analysis of economic transition situation in Kazakhstan. It studies various economic transformation aftereffects under transition to identify their impact to rural people's well-being and food security. The paper also presents the issues of Kazakhstani agrarian sector and women status in this sector, applying the growth constraints analysis (hereinafter GCA) and engendering the GCA and the empirical research on Karaganda oblast. Based on growth diagnostics recommendations developed by Hausmann et al. [6], this paper examines the economic history of Kazakhstan and identifies the growth constraints of agriculture development. This paper considers different phases of the Hausmann's growth diagnostic decision tree, namely, "high cost of finance"; "bad local finance"; "low competition-high risk-high cost"; "low return to economic activity"; "bad infrastructure," etc. to define constraints to agricultural growth and food security in Kazakhstan. Gender issues are considered at all stages of the GCA. The paper examines food security issue in Kazakhstan through identification of gender differences in economic, social, and physical access to food. Also, it focuses on causes of gender distinctions and the extent to which they can affect agricultural growth and food security [7].

Analysis of the secondary data, review of reports, and the literature on gender and food security were used. Participatory observation is one of the methods of data collection. This paper includes results of the interviews with rural women of Karaganda oblast and with a professor in food safety. The interviews of rural women were done in 2015 in two rural regions of Karaganda oblast including Amangeldy sovkhos and Abay village, to demonstrate the realities of rural women in Kazakhstan and their unpaid labor role in providing food security and to explore to what extent women's incomes can provide them with access to quality food.<sup>1</sup> Respondents were rural women engaged in household only and were selected from households with two parents and at least one child. Middle-income households with one cow or other farm animals and a small land plot were selected. Open questions with an open-ended choice of answers were used. The interview included questions on income sources and major expenditures; respondents' opportunities to get credits; challenges and benefits of working in private allotments; employment opportunities in formal sector; and starting own business. The study concludes that "more equal gender relations within household and communities lead to better agricultural and development outcomes including increases in farm productivity and improvements in family nutrition" [8].

## **2. Gender and macroeconomics: overview**

To understand better the nature of gender relations, I focus on the pertinent social differentiations between women and men. "The concept of sex expresses

<sup>1</sup> Unpublished interviews with women of Sovkhoz Amangeldy and Abay village in Karaganda oblast in August 2015. Forty married women between the ages of 35 and 55 were interviewed, among them 20 interviews in Sovkhoz Amangeldy and 20 in Abay village.

two layers of reality: physiological and social. The first layer is the one a person is born with, while the second one, socio-sex (designated in literature as gender) is acquired in the process of socialization" [9]. "The concept of gender, like concept of class, is an analytical tool to understand social processes" [10]. Historically, the significant "changes in women's and men's status in the society were related to the development of material production activities and military art, when in demand were those socially significant attributes and abilities, which psychosomatically are more characteristic of men" [9]. Accordingly, women are often excluded "from prestigious activities, objectively placing" men in a dominant position in society and economy [9]. "Gender measurement of human reality starts settling in. At each level of human existence, certain gender roles are shaped and there arises social and economic inequalities between men and women" [9]. These distinctions in the social and economic status of men and women are maintained and reinforced by the process of economic development. "Due to persistence of gender discrimination, women play submitted roles, while men dominate in all areas of the society. Most important is that all laws and rules emerging in society have always been aimed at gratifying people's own egoism, especially in the men-women relationships. All legislative measures were worked out by men. Breaking this stereotype is a difficult task" [9].

According to Marxist economists, the root causes of gender discrimination raise from ownership relations, namely, the alienation of women from possession of resources [11]. Differences in economic status of women and men are subject to underlying laws of economic development. The basis of production and social relations are ownership relations that determine whether women can use their capabilities and convert opportunities. Marxist economists argue that, namely, ownership relations determine the economic opportunities of men and women. Cagatay et al. [10] analyzing different approaches to engendering macroeconomic modeling pointed out that "gender as a category of social and economic differentiation (like class and race) influences the distribution of work, income and wealth, the work productivity, and the behavior of agents in the economy." Consideration of gender relations in economy in terms of "access to capital and property, buying and selling of labour power, distribution of income and time resources" [12] shows that there is gender inequality in Kazakhstan and it constrains economic growth.

"According to the materialistic conception, the determining factor in history is the production and reproduction of the immediate essentials of life. This is of a twofold character. On the one side, the production of the means of existence, on the other side, the production of human beings themselves" [11]. However, "macroeconomics considers paid work and productive economy, but doesn't consider unpaid female labor and reproductive economy" [10]. Isolation of the reproductive sector from the productive one results in gender inequality [13]. The reproduction of the means of life and reproduction of life itself in fact are two inseparable components of social production. However, the reproductive sector is considered as a subordinate sphere [13]. The woman is the main agent of activity in the system of relations, which forms reproduction of life itself. Therefore, the position of a woman is secondary in the system of the economic relations [14]. Walters [13] criticizes the standard assumption of exogeneity of labor force and points out that labor force requires investments both in the productive and in the reproductive sectors. Considering the importance of health, education, and social infrastructure for labor force growth, he points out that on the whole the reproductive sector affects the quantity and quality of the labor force [13]. Women's unpaid labor in reproductive sector, such as childcare, food producing and processing, cooking, preschool training, etc., contributes to the development of quantity and quality of labor force and to the enhancement of economic growth in the future.



Sustainable food security deals with the sustainable environment and economic development, which promote “equal access to quality food, its availability, and economic ability of population to buy a quality food” [15]. Gender disparity in economy affects the solution of vital economic issues including food security [16]. Promotion of gender justice and sustainable development and engendering of economic policy with consideration of the own country specifics, traditions, and historical roots are crucial issues for Kazakhstan.

### **3. Growth constraints analysis**

Analysis of economic transition situation in Kazakhstan and various economic transformation aftereffects in transition are necessary to identify the main constraints of the agriculture’s growth and food security and mitigate the inequalities, which rural women face. It is necessary to consider the “country’s economic history and performance, as many of the problems of the past as well as constraints for future actions are affected by macro concerns” [6].

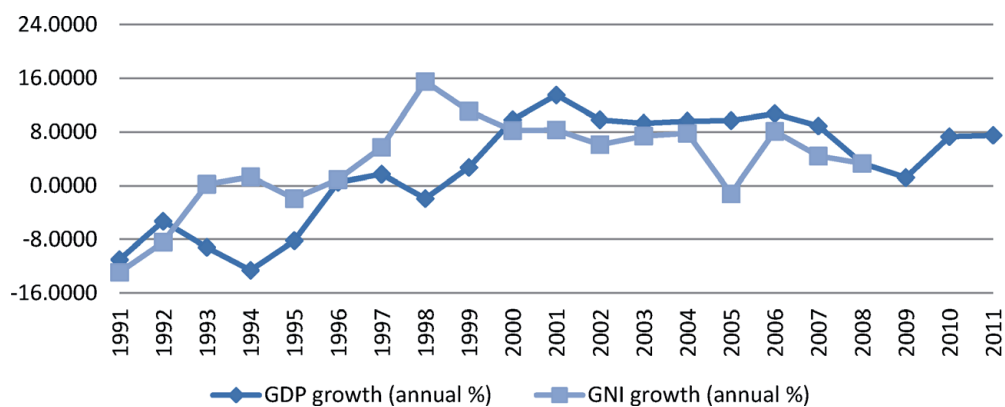
The post-Soviet heritage of Kazakhstan was the one-sided development of the economy with specialization on grain, oil, gas, and coal that affected the country under transition. After the USSR collapse, between 1990 and 1998, there was an economic recession in Kazakhstan. The interest rates were high (about 300–400%) and this resulted in the reduction of credit and business growth. The populations purchasing power and incomes also declined, and poverty and income inequality increased. “Agricultural growth is the most effective way to reduce poverty and increase food security in low-income countries that depend heavily on agriculture” [5]. Agriculture was not a priority for the Government of Kazakhstan and it was funded on residual principles. Nevertheless, agriculture is the most crucial branch in the national economy. Kazakhstan, where 46% of population reside in the countryside, one-third of all employed is engaged in the agrarian sector, and 80% of land are the farming one, is considered as an agricultural country. Most part of agricultural land is disposed in the zone of risky farming and is dependent on weather. Moreover, agriculture is dependent upon state support. During Soviet time subsidies for agriculture were 10–12%, and after 1991 it was reduced to 2–3% [17]. Agricultural production dropped deeply as a result. It had adverse impact on the whole population but mostly on women. The number of men that lost their jobs in the agrarian sector moved to the cities to find the new ones. Work intensity of rural women was increased due to extra agricultural activities [18]. “When the length of the working day increases beyond a critical point, time spent on leisure, social activities, and even sleep is necessarily reduced, with the corresponding decline in well-being becoming unavoidable” [19].

During the 1990s, Kazakhstan’s development has been characterized by privatization. As a result of privatization in agriculture, almost all of the “sovkhozes” (state farms) and “kolkhozes” (collective farms) were reorganized, and their farm lands and equipment were transferred to the farm members in the form of “pai” [share] [20]. It was a notional land or material share without personification and specific plot of land. Unfortunately, most of the rural citizens could not benefit from the privatization. The heads of former state and collective farms became the owners of privatized farm property due to the undeveloped land reform and corruption [20]. Private ownership of land was provided by the Land Code of the Republic of Kazakhstan of 2003. Unfortunately, by that time most of the rural people sold their “pais” for cheapest prices and had nothing to buy the land, neither “pai” nor money. In the second half of the 1990s, more than one-third of Kazakhstan population was poor, with income below the subsistence minimum.

Salaries were not paid for a long time, and sometimes workers received substitutes of salary in the form of equipment or food [20]. Women were worse off in terms of income, time resources, and position on the labor market and in the household. They did not participate in the reformation and privatization in agriculture due to lower access to the decision-making positions. They could not form individual farms due to lack of funds and entrepreneurial skills. Only 10% of farms were headed by women in 2005, 12% in 2008 [21], and 9% in 2014 [22]. Privatization promoted further property differentiation and gender discrimination. Women were unable to use advantages of privatization process.

Since 1999, Kazakhstan has reported economic growth. In the composition of economic growth, the share of agriculture among the other sectors of economy is significantly low [23]. The share of construction, services and utilities, oil and gas, and mining sectors is significant. Kazakhstan has prioritized the development of extractive industry, with low proportions of the sectors producing final, processed manufactures. National export consists of 97% of extractive industry products. Raw-material orientation of the Kazakhstani economy results in the decreasing in the economy competitiveness [24]. “Countries specializing in primary commodity exports, however, import mainly finished manufactured goods which have few spillover effects on productivity and output growth” [25]. There is “another side” of resource wealth. One of the poorest regions in the country is West Kazakhstan, and it is where most of the oil resources are concentrated. Stiglitz (in Ref. [26]) called it as a “resource curse.” “Much of the natural resource base of the country is increasingly owned by foreign investors” [24]. Hausmann and Klinger [27] examined the economic growth of Peru and pointed out that the gap “between the growth rate of GDP and GNI demonstrates the share of domestic product which accumulated by foreign investors.” In the case of Kazakhstan, we can see from **Figure 1** that since 1999, the growth rate of total GDP has been higher than GNI. This gap is not as large as in Peru (see in Ref. [27]) but still demonstrates a sizable difference, indicating therefore that some part of the domestic product is accumulated by foreign investors.

Extractive industry does not create a lot of jobs and moreover, it is a male-dominated sector. According to official statistics, only 1% of employed women and 4% of employed men work in the mining sector [29]. 78% of all employed in oil, gas, and mining sectors are men, and only 22% are women. Construction sector has the same picture that is 73% of men and 27% of women [29]. After 1999, a lot of constructions occurred in largest cities such as Astana and Almaty. This type of business favored the men employment. The development of the competitiveness of non-oil and non-construction sectors could create additional employment opportunities, especially for women.



**Figure 1.**  
*Dynamics of GDP and GNI in Kazakhstan. Source: on the basis of World Bank [28].*

Economic growth could create new opportunities for food security. Economic growth provided increase in the budget of the Ministry of Agriculture of the Republic of Kazakhstan from \$174MM in 2001 to \$931MM in 2008 [17]. In 2014, agriculture budget was \$1200 MM. The question is “Who are the beneficiaries of these funds?” Why, in spite of the total GDP growth and decrease of budget and subsidies of the Ministry of Agriculture of the Republic of Kazakhstan, is Kazakhstan still food insecure, and why does it have a non-developed agriculture with low productivity and no competitiveness? First of all, there are the facts of misuse and insufficient, ineffective use of budget funds by the Ministry of Agriculture of the Republic of Kazakhstan. According to the Accounts Committee [30], the total amount of 79.6 billion tenge (\$437MM) was used by the Ministry of Agriculture of the Republic of Kazakhstan with violation of the budget and other legislation. This Ministry has also used inefficiently the national budget and the state assets which are equal to 43.1 billion tenge (\$237MM).

The 2003 Land Code of the Republic of Kazakhstan promoted the rise of quantity of individual farms (non-state enterprises). Currently, there is a state and private property of land in Kazakhstan with prevalence of private sector in agriculture. 93% of all agricultural lands are used by non-state enterprises. In 2010, there were 175,636 operating agricultural units, of which 5408 were non-state corporate farms; 170,193 family farms; and 35 state enterprises. It would be reasonable to consider private enterprises’ constraints to invest in agriculture since there is a prevalence of private sector in agriculture.

According to Hausmann et al. [6], low levels of private investment and entrepreneurship are the constraint of the growth. There is a restricted access of agribusiness firms to finance. Only 3.5% of total commercial loans goes to agriculture in Kazakhstan [31]. In 2011, 71% of all bank assets were consolidated in five large banks in Kazakhstan, where the Government of Kazakhstan owned the considerable share [31]. It is obvious that there is no competition in financial sector and interest rate can be identified monopolistically. The largest banks have set a high interest rate of up to 14% annually.

According to the OECD [31] bank survey on interaction with the agribusiness sector, 45% of loans to agribusiness were provided to large-scale companies; 25% to medium-sized companies; and 30% to small farms. The share of loans to rural small enterprises is very low. However, it is a large sector that attracts most of the agricultural labor and produces 50% of agricultural output [3]. The majority of women entrepreneurs tend to be in small enterprises [32]. In 2015, the share of women entrepreneurs in small business of a country was 50%, and only 15% of large companies were headed by women [33]. Women have limited economic opportunities and therefore prefer small business which requires less resources, managerial skills, and documentation requirements [32]. Therefore, bank preferences to finance large enterprises restrict access of women to credit.

Investing in agriculture has high risks [31], high risks of banks deal with the low productivity of agriculture and nonperforming loans. Rural enterprises often default on the loans. Nonperformance on loans consists of 25% of gross total loans [31]. It constrains financial institutions from crediting to agribusiness. In order to compensate risks, banks raise the nominal interest rates and establish high collateral for lending. Cost of collateral for agricultural enterprises is higher than for other sectors [34, 35]. Mostly women cannot fulfill collateral requirements and therefore have lower access to credits. Agribusiness is characterized by low return on investment [31]. Low level of investment to agriculture results in the low productivity; low material-technical base; and insufficient use of seeds and fertilizers and bad infrastructure. 80% of farming machines are in technical rundown [36]. Labor productivity in agriculture is very low and accounts \$3400/worker/year [37]. Despite



the fact that agricultural infrastructure is already underdeveloped, the Government of Kazakhstan decreased expenditures on infrastructure from 16% in 2001 to 5% in 2009 [17]. All of these factors contribute to the production cost increase and no competitiveness of domestic food products.

According to the survey on Karaganda oblast, women are unaware about their opportunities on subsidies and credits (90% of the respondents). Women do not have appropriate qualification and management skills and proper knowledge to fill out documents and procedures on getting credits (90% of the respondents). Most of the women are reluctant to deal with banks or are anxious to take credits because of the unstable general financial situation in the country and non-confidence in their power to handle own business or mistrust to banks (77.5% of the respondents). Women are really concerned about the banks. Few of them who received credits (10%) pay high interest rates. Majority of women prefer to borrow money from their rich relatives and friends (70%). Usually, most of the credits women obtain are the microcredits which aren't enough to develop successful business.

There are almost no bank branches in rural areas of our country. It takes a lot of time for rural people to get nearest bank branches because of bad transportation. It contributes to the increasing of transaction costs. High transaction costs are also obstacles for small farmers and enterprises [31]. The situation with women is complicated by the fact that having a high "time intensity" [18], they cannot postpone their routine daily household duties such as cooking, child caring, and feeding of domestic livestock in order to go to the city looking for the bank [12]. So far the state support is needed to develop the women's entrepreneurship in terms of favorable tax system and conditions to access loans and trainings in business management.

#### **4. Time use analysis**

Considering constraints to agricultural growth and food security, it would be reasonable to take into account time allocation between men and women in household and then to consider how gender differentials in time allocation can impact food security. The Statistics Committee of Kazakhstan periodically conducts sample household survey in all oblasts of the country focusing on time use module [38]. This method allows examination of all kinds of household members' activities they do for a week; to determine their real work load; and moreover to demonstrate time use differences between women and men of urban and rural areas. The data were collected from all household members over 18, and the time scope was 7 days including all days of the week (**Table 1**).

According to the Statistics Committee of Kazakhstan data [38], respondents recorded the time spent for each activity performed by them within a day in chronological order. Data shows that women have larger workload and there is a time use discrepancy between men and women. Men in urban and rural areas spend more time for paid work. In agriculture men spend for paid work 6.8 h/week more than women. In urban area this difference is 4.8 h. Wage workers can accumulate more qualification and skills to increase their income. Wage employment is a stable source of income, which guarantees work experience benefits and contributions to the pension fund.

Data shows that women spent more time for chores. In agriculture women spend 17 h/week for cooking and dishwashing. It is approximately two times more than men allocate doing these jobs. Similar situation can be observed in performing other chores. Due to society's mentality, all housework is traditionally considered as women's one. Even if a man is temporary unemployed, he does not do "women's work" like cooking, laundering, and dishwashing. All of these works in household



+	Persons above 18 (person/hours)			
	Urban area		Rural area	
	Men	Women	Men	Women
Paid work	46.3	41.5	46.3	39.5
Getting to the work place	5.3	4.5	4.0	3.2
Work on the private land and housekeeping	14.1	13.6	16.0	17.3
Studying, in-service training, and self-education	34.5	31.5	38.3	32.5
Getting to the place of studying	4.6	4.4	4.6	3.4
Food shopping	3.3	4.4	2.6	3.4
Nonfood shopping	2.5	2.5	3.2	2.3
Attending consumer service houses	1.3	1.5	1.3	1.4
Cooking and dishwashing	9.5	16.2	9.0	17.0
Repair the housekeeping items	4.3	5.1	4.3	5.4
Laundry, ironing, clothes repairing	2.4	3.5	2.6	4.3
Childcare (children under 12) live in family	9.1	16.1	7.4	12.6
Caring for the elderly who need help	5.2	6.5	6.1	8.0
Attending museums, cinemas, concert, etc.	3.2	3.1	3.0	2.5
Watching TV	19.3	17.2	20.0	17.5
Attending fitness centers and sport clubs	2.4	2.4	1.6	1.5
Sleep	55.4	55.3	54.5	54.3
Free time	22.5	20.6	23.2	20.5

**Table 1.**  
*The time budget of all members of households during 7 days of the week according to the type of activity, the category of population, and gender in 2006 (according to the data of simultaneous research).*

are unpaid and waste women’s time which she could spend for training and paid work. The more time women spend for unpaid work, the fewer opportunities she has to increase income.

**Table 1** shows that women spend 1.3 hours more than men working on the private land and doing housekeeping that equals 17.3 h/week. Actually this figure is higher because according to observation most rural women estimate their work on household plots as leisure. All respondents in Karaganda oblast answered they have a high burden in household and run around in circles between 6 A.M. and 12 P.M. Mentality of the society and heavy burden in the household set the restrictions for women, so they have no time, power, and energy for paid work. Low revenues do not allow family to mechanize housework and mitigate women’s burden [18]. She was exploring interrelations between well-being and work intensity, pointing out that the lower the welfare of the household, the higher time and labor intensity.

Unfortunately, statistic agency’s time use survey does not consider activities done simultaneously. Respondents registered their time on sequentially performed jobs during a week in chronological sequence. However, for example, in rural areas, women usually cook, work in the household plots, and care for children simultaneously [18]. She points out that “intensification of work ... by simultaneously performing two or more activities that require considerable energy or concentration is a qualitative dimension of time use that affects the well-being of the worker as well as the household” [18].

Both rural and urban men have more free time than women. Rural women have 20.5 hours of free time compared to 23.2 h of rural men. Free time is important to reproduce labor force [39] and to develop “internal freedom, creation of an inner world and a person’s inner self-changes” [9]. “Free time is a space for human development [40],” for the comprehensive development of the human being. The lack of free time can result in human degradation to further enslaving division of labor. Women have a larger unpaid workload in household, they can spend a restricted time for paid work because of family preference, and therefore they have less opportunities to accumulate qualification and skills to increase income and have a low access to quality food.

## 5. Food security

There are numerous definitions of food security in the scientific literature, but they are all about “physical, social and economic access to all people at all times to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” [41]. Food independence, as a characteristic of food security, is critical for Kazakhstan. For a country with a fair number of natural resources, in order to provide the expanded reproduction of agricultural sector, domestic food production should be more than 80% of the country’s food consumption [42]. When the country is specialized in certain types of food, its export should provide foreign trade surplus on food [42]. One of the main criteria of the country’s food independence is connected with the financial ability to import the missing food and satisfy the demand of its population [42]. In Kazakhstan, “the most of domestic agro-food products were sold unprocessed, and higher quality processed foods were imported” [43]. In 2014 Kazakhstan had a positive foreign trade balance on agricultural products in the amount of US \$198,7 million and the negative foreign trade balance on food products US \$1782,2 million [42]. Kazakhstan is dependent from food import [44].

In 2017, food self-sufficiency, as a level of domestic agroproduction to the consumption standards, on meat and meat-based products was 62%; on milk 78%; on poultry meat 59%; and on fruits and berries 49%. The positive situation is with the self-sufficiency on grain 161% and potato 195% [44]. When calculating the level of food self-sufficiency, it would be more accurate data if loss of agricultural products will be considered. 30% of agricultural products do not reach consumers due to lack of storage conditions and imperfect economic relations between agribusiness companies and between producers, processors, and trade organizations [42, 45, 46]. So, we can conclude that domestic food supply is likely to be lower than official data. Kazakhstan is dependent from import on basic food stuffs. The more the import of food, the higher extent of dependence the country has from importers and market fluctuations and higher threat for the country’s food security [47].

Nowadays, a significant part of the population’s consumption of the country, especially in rural areas, consists of food produced on household plots and small peasant farms. Household plots calculated 1643.3 thousand units in 2016, and they produced 70% of potato; 50% of vegetables; 88% of milk; 76% of meat; 36% of eggs; and 68% of wool [23]. It is obvious that these farms are strategically important for food security of the country. They produce around half of the gross product. Women are the main economic agents in small peasant enterprises and household plots; therefore, they are important for food security of the country. However, household plots do not ensure women with high income. According to 2015 interview data on Karaganda oblast, the majority of respondents (90%)

answered that private allotments bring unstable and humble income. Women were undecided to name specific income data, and only 30% of them answered they had about 60,000–70,000 KZT/month from the sale of agricultural products at the time of vegetable and berry harvest. Perishables such as milk and cottage cheese require certain storage conditions or immediate sale. 60% of respondents have no transport to deliver products to the city market. Resellers offer cut prices. The majority of respondents (80%) noted that they often have no funds to purchase fertilizers, high-grade feed for livestock, and agrotechnics. Thus, according to the survey, low incomes from private farms and low productivity of private farms, along with weather conditions and time intensity, are associated with financial problems that aggravate purchase of quality fertilizers, feeds and necessary farming equipment, as well as problems in sales of products, due to undeveloped rural infrastructure and lack of transport.

Regarding expenses, 90% of respondents said that about 60% of the total household income is spent on food, the rest on clothing and footwear. 10% of respondents spend all their income to educate their children at the universities. 80% of women visit free medical institutions or self-medicate, and only 20% of them could afford paid medical services, since they were forced to do so due to medical prescriptions. Proper social support for women and infrastructure development could mitigate women's unpaid work in this sector and promote effective producing, harvesting, processing, and marketing of agricultural products and mitigate constraints to food security.

Economic access to food is assessed by the population's purchasing power and well-being [48]. According to official data, in the past several years, due to economic growth, population's welfare has improved. In 2014, the share of poor people was 2.8% in contrast with 6.5% in 2010 and 34.6% in 1996 [29]. In 2017, only 0.1% of population had earnings lower than subsistence minimum according to official data [3]. However, the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan estimates the poverty line as 50% of the subsistence minimum (before January 1, 2018, it was calculated as a 40% of subsistence minimum). The Government of Kazakhstan uses this indicator to provide social assistance for poor people. The subsistence minimum in Kazakhstan is similar to the minimum consumer's basket cost, and in 2018 it equals to 28,284 KZT or \$86, from which 60%, namely, \$52 or 14,675 KZT, is the food basket. In 2011, the poverty line is 6243.6 KZT (\$42) and in 2018 it is 14,142 KZT (\$34). We can see that if in tenge this indicator grows, the dollar one falls. The quantity of goods and services that can be purchased for this amount is reduced. Quality processed food, medicines, clothing, and footwear are mainly imported, and their prices are set in accordance with the dollar exchange rate. In the past 8 years, the tenge has depreciated by almost 65%. Prices for local food products are also increasing, as production costs are rising: imported equipment, raw materials, vaccines, and fertilizers are used to produce them. Prices for gasoline, electricity, and the cost of a pitch in a market place are also increased. Thus, quality food products that are vital to a human being, such as fish, nuts, meat, olive oil, fruit, etc., are becoming less accessible to most of the population. The real purchasing power of population is falling. \$86 (subsistence minimum in Kazakhstan) is not enough to cover vital human needs with consideration of the average family size which is 3.5 persons [21], while prices of utilities, energy, and medical services are increasing. Moreover, it is necessary to apply international standards to calculate the poverty line. Poverty line should be equal to subsistence minimum to guarantee proper social support for poor people. In 2015, poverty in rural areas was 3.6 times higher than in urban areas [23], and 45% of all unemployed reside in rural areas.

Women employed in agriculture have a lowest wage both compared to women of other economic sectors and to men of all sectors [49]. Earnings of 4.4% of the rural population are lower than the subsistence minimum [3]. Furthermore, counted subsistence minimum is inadequate for the upper middle-income country [50]. Moreover, in 2017, 23% of the working-age population was self-employed, and 62.4% of all self-employed people reside in rural areas [3]. 44% of all self-employed in agriculture are women [3]. Although there is not a single, unified definition of the “self-employment” notion in the current legislation of Kazakhstan, usually in practice self-employed people are more vulnerable in terms of stable incomes, social security, work experience records, and contributions to pension fund. They have a limited access to bank loans. So self-employed rural women are more vulnerable than wage-employed people in terms of incomes, position on the labor market, and access to quality food. The same situation is with informal employment. Around 70% of informal employees are engaged in agriculture [51]. Rutkowski (in Ref. [51]) pointed out that informal jobs are associated with low skills and productivity. Women prefer informal activity because working in the formal sector has a high cost including high taxes and document registration due to high bureaucracy. Women engaged in activities that deal with informal self-employment “encounter borrowing constraints, preventing their entry into the formal sectors” [52]. According to interview data in Karaganda oblast, 70% of women could not find decent jobs and have to work in their households only. 30% of respondents answered they do not want to work for low wages on low-skilled jobs outside the household.

On top of that, a woman's salary is 68% of the man's salary. Women have to choose low-paid jobs due to their responsibilities in terms of family and home-work, limited access to retraining, and inability to work overtime on the paid job. Therefore, women are less suitable labor for employers. In 2017, the share of unemployed women was 53.6% of all unemployed, and 43% of all unemployed women resided in rural areas [3].

Over the last decade, according to the official data, the education and health expenditures have increased. However, these measures do not contribute to the welfare of the population due to inflation, which was 7% in 2017. Moreover, considerable assets have been spent to the elite educational institutions and hospital construction in Astana and Almaty cities. These elite schools, universities, and hospitals provide very expensive services that are unavailable for the majority of the population [53]. Last year's prices of quality medical services, utilities, electricity, and food have increased, and most of the public preschools have been closed. This has limited women's ability to find a paid work and has increased their unpaid work in household, thus increasing women's time pressure. The higher prices for food, the lower the consumption of quality food, which is usually more expensive. In Kazakhstan the consumption of meat, fish, and fruits has decreased. “Underconsumption of vital foods has result in the deterioration of immunity and health” [16]. Almost 40% of women in Kazakhstan suffer from anemia due to deficiency of iron [49].

One of the criteria of food security is the food quality. According to veterinary statistics, 20% of livestock in the country are infected by brucellosis or are located in areas where brucellosis was identified [54]. In 2012, 180 hearts of severe infectious diseases were registered. As a result, only less than 25% of cattle are in the regions where export is permitted [55]. At the interview with a professor from Agrarian University, he said the vaccines for brucellosis currently used in Kazakhstan are not effective in preventing brucellosis in our country and do not work against species of *Brucella* prevalent in our country. The professor proposed



his own vaccine against Brucella that he has developed. Funding is required for further elaboration, testing, and implementation into production of new vaccines. Unfortunately, the Kazakhstani Ministry of Agriculture has not devoted funding for the development of his vaccine. Possibly the Kazakhstani Ministry of Agriculture has own benefits from buying ineffective vaccines. The vaccines, and not only vaccines for brucellosis, often are kept under conditions which do not meet the standards of vaccine storage.<sup>2</sup>

Moreover, the Ministry of Agriculture provides only diagnostic of disease on a cost-free basis, and farmers have to pay themselves for vaccines. The predominance of small-scale production in agriculture based on individual household plots and small farmers and the need for farmers and peasants to pay themselves for vaccination of animals also caused spreading of brucellosis. Farmers and peasants are not interested in spending money on vaccines due to low incomes. 80% of human diseases come from livestock and most livestock infections originate from poor countries. Women, as main economic agents who process meat and milk, are an at-risk group who can be infected by livestock diseases. Most of the domestic and imported food contains harmful substances [47, 56, 57]. According to the Sanitary-Epidemiological Committee of the Republic of Kazakhstan, around 70% of harmful substances enter into the human body with food [47]. Organic products are very expensive and inaccessible for the most of population. Two-thirds of the rural population has no access to safe water supply due to the insufficient technical condition of the existing water supply systems [58]. Very often the food import in Kazakhstan deals with import of low-quality cheap food from China. According to Kaigorodtsev (in Ref. [47]), there is a threat of “biological degradation of the population in terms of deterioration of the nutrition structure” [47]. “Governance focuses mostly on output, quantity, but not on the issues of effective allocation of resources, quality of product or social issues” [43].

Despite all the challenges, Kazakhstani people had rich qualities; “they recognized martial prowess, hospitality, respect for elders, love for children, and ready aid to kinsmen as virtues” [24]. According to Kazakh national traditions, children will maintain their old parents, more rich relatives help the poor ones, and men have full responsibility for the family’s well-being. Maybe these national characteristics will help poor households and women to survive also in the future.

## **6. Conclusions**

As an agricultural country, Kazakhstan should prioritize the agricultural growth in order to provide food security and mitigate poverty. For a country with a large reserve of natural resources and largest employment share in agriculture, food self-sufficiency is an important prerequisite of food security. Literature review and data analysis show that in spite of the growth in total GDP and budget increase for the Ministry of Agriculture of the Republic of Kazakhstan, Kazakhstan is still food insecure and has the underdeveloped agriculture. Kazakhstan is dependent from food import. Fieldwork data analysis has determined that economic access to safe and nutritious food is limited by low purchasing power and well-being of whole rural population, but women are relatively worse off than men.

The empirical analysis revealed that the access of rural women to finance is limited by the high cost of finance, which is the result of the high interest rate, high risks for banks in lending of agriculture, and high transaction costs. It primarily

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<sup>2</sup> Unpublished anonymous interview with a professor of Kazakh National Agrarian University on food security issues, 2013

affected the small enterprises and women who can handle only small business. Deficiency of skills and training opportunities; unpaid household work; high time and work intensity; low access to land, equipment, and quality fertilizers; and mentality of the society on “women’s work” demonstrate gender inequality in Kazakhstan’s agriculture sector which constrain agricultural growth and the national food security.

Cultivation of household land plots became a main survival strategy of a family, in terms of individual consumption of the products in the household and in terms of income from the sale of the surplus product in the markets. Unfortunately, this sector cannot provide women with the sufficient income due to low productivity and lack of resources to buy fertilizers, livestock feed, and agricultural equipment. Most women have not any market experience and often face challenges in selling their products. Such a situation becomes keener due to bad infrastructure which increases women’s business costs and work burden.

This paper calls the attention of Kazakhstan’s policy makers to the importance of gender mainstreaming in food security programs; women’s role in economy; and unpaid labor in household. Proper state support for women and infrastructure development is needed to mitigate women’s unpaid work and free up time for further training and for decent paid work in the formal sector. It could promote effective producing, harvesting, processing, and marketing of agricultural products and mitigate constraints to food security provision. This paper provides analytical examination of interaction of gender equality and food security and concludes that gender discrimination affects the national food security.

Kazakhstan has elaborated and signed a number of documents on gender equality. However, there is a gap between the creation of legislative documents and their actual implementation. Nowadays the major question is how the declared tasks should be implemented. Gender mainstreaming into food security is about not just women’s issues in agriculture but also poverty, unequal access to resources, unequal distribution of income, as well as wealth and corruption. All human beings, especially decision-makers, shall be “responsible for results. Personal characteristics of employees (including potential negative demonstrations such as personal ambitions, incompetence”, and preference to personal interests) “may differently affect public interests” [9]. “The rate of divergence between the set objective and its actual implementation is the measure of personal” and moral responsibility of each member of the society [9]. This gap “may affect the quality of outcomes, in our case resulting in gender inequality remaining” [9]. Spiritual and moral crisis is the main “cause of all other forms of global crisis” including economic, ecological, and social crises [59] and corruption. To overcome the spiritual and moral crisis, the humanization of people is needed and changing the outlook of people and their attitude to other people and the environment. Efforts to achieve gender equality must include personal spiritual revival and promotion of a truly civilized society, where absolute values and norms of life are freedom, equality, and security of everyone.

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